County of San Diego
Revised: June 14, 1993
Reviewed: Spring 2003

CIVIL ENGINEER **Class No. 003635**
SENIOR CIVIL ENGINEER **Class No. 003720**
PRINCIPAL CIVIL ENGINEER **Class No. 003700**

DEFINITION:

To supervise and coordinate professional civil and structural engineering work in the field and office, and to perform related work as required.

DISTINGUISHING CHARACTERISTICS:

Classes in the Civil Engineer series are distinguished from other engineering classes by registration in the State of California as a Professional Engineer. These classes are found only in the Department of Public Works.

Civil Engineer: This is the journey level class in the Civil Engineer series. Under direction, Civil Engineers perform complex engineering research and design project work, and have responsibility for a wide variety of engineering projects or programs. As project engineers, Civil Engineers may lead groups of professionals and supervise technical staff.

Senior Civil Engineer: This is the lead/supervisory level class in the Civil Engineer series. Under direction, Senior Civil Engineers are responsible for handling highly visible and sensitive projects, and for supervising subordinate engineering staff performing several projects.

Principal Civil Engineer: This is a management level class. Under administrative direction, Principal Civil Engineers are responsible for managing all engineering projects and programs within a major organizational section and for supervising subordinate engineers. Incumbents generally report directly to either a Deputy Director - Public Works, or a Deputy County Engineer.

EXAMPLES OF DUTIES:

Serves as a group supervisor, or project leader, by preparing engineering plans, specifications, and cost estimates related to departmental projects and programs; supervises, trains, and evaluates the work of professional and technical staff; prepares engineering documents including structural drawings, contract proposals, material lists, reinforcements, and structural specifications for a wide variety of earthwork projects and structures reviews and checks structural designs, calculations, contractors' shop drawings, and engineering drawings for construction, repair, and maintenance projects; selects and uses computer software to develop engineering and mathematical analysis of design problems in hydraulics and hydrology, drainage and control facilities, solid waste disposal operations, highway design, traffic control, water distribution and rehabilitation studies, and air and water quality design standard determination; reviews proposed projects to ensure compliance with regulatory requirements; coordinates structural designs with mechanical and electrical components; serves as resident engineer at the site of a construction project or as assistant resident engineer on several projects; directs field crews engaged in a variety of engineering construction, maintenance, and repair activities on service contracts and projects, prepares estimates for payment to contractors; inspects work in progress and completed projects to verify compliance with design; prepares technical and engineering correspondence and reports; and performs related work.

Senior Civil Engineer (In addition to the duties listed above):

Represents the department providing technical expertise on matters pertaining to policies, procedures, practices,

standards and departmental position on pending discretionary actions to public and private agencies and individuals; recommends selection and fee negotiations to provide competent, cost effective consultants; ensures that an organization's technical actions and documents are consistent with acceptable engineering practice, safety features, ordinances, policies and statutes, and protect public health and safety; minimizes environmental impact and conserves public funds; and plans, organizes, directs and controls resources assigned to best accomplish the assigned functions within budget and at maximum effectiveness.

Principal Civil Engineer (In addition to the duties listed above):

Plans, directs and supervises the activities of engineers, technicians, and planners engaged in the preparation of preliminary studies, reports, design calculations, cost estimates and analyses, contract documents and control specifications, and economic feasibility of proposed projects for the planning, design, construction, and/or maintenance of a variety of projects; coordinates research and administrative activities in developing engineering projects and programs; directs the work of subordinates engaged in maintaining surveillance over projects; coordinates the preparation of comprehensive reports; confers with officials and engineers at all levels of government and private industry; and attends public hearings and committee meetings, and provides information and recommendations.

MINIMUM QUALIFICATIONS:

Knowledge Level: T = Thorough; G = General; -- = Not Applicable

Classification Level: C = Civil Engineer
S = Senior Civil Engineer
P = Principal Civil Engineer

Knowledge of:

C	S	P	
T	T	T	Modern civil engineering theories, procedures, and methods to solve a wide range of engineering problems.
T	T	T	Mathematical and mechanical principles of structural and hydraulic design.
T	T	T	Construction materials and equipment of building highways, drainage, and control facilities and structures.
T	T	T	Methods and techniques in preparing engineering contract proposals.
T	T	T	Principles of earthwork, including highways design and construction.
T	T	T	Engineering project inspection methods and practices.
T	T	T	Traffic control.
G	T	T	State, federal, and local statues, ordinances, policies, standards, and practices pertaining to civil engineering.
G	T	T	Supervision and training principles and methods.
--	G	T	Principles of management, administration, organization theory and practices.
--	G	T	Negotiation techniques and the competitive bidding process.
--	G	T	Construction contract law, administration, and labor relations.
--	G	T	Organization and operation of private firms engaged in civil engineering services and facilities

			construction.
--	G	G	Principles of cost accounting, cost-analysis, and engineering economics.
--	G	G	The General Management System in principle and in practice.

Skills and Abilities to:

The following apply to all classes:

- Prepare and check engineering designs, details, estimates, plans, and specifications.
- Apply modern engineering techniques to solve a variety of engineering problems.
- Prepare technical correspondence and engineering reports relating to assigned building and construction projects.
- Serve as resident engineer on projects of moderate complexity, or assistant resident engineer on a major project with significant costs and technical factors.
- Direct and advise construction inspectors or design units.
- Serve as a group supervisor or project leader in planning, directing, and coordinating the work of subordinate engineers and technicians.
- Select and use computer software to develop engineering and mathematical analysis for a wide variety of design problems.
- Review proposed projects to ensure compliance with regulatory requirements.
- Communicate effectively in oral and written form.

Senior Civil Engineer (in addition to the above):

- Identify and define technical and administrative problems, identify and evaluate alternative solutions, and select and implement the best alternative.
- Handle sensitive issues with public and/or client engineers' representatives.

Principal Civil Engineer (in addition to the above):

- Plan, organize, staff, and direct civil engineering projects, programs, and studies within a major functional unit.
- Direct the preparation of a variety of engineering studies, planning reports, cost estimates, plans and specifications.
- Interpret technical information and advise public and private officials and engineers.
- Apply the principles of cost analysis in the determination of economic feasibility of engineering projects and programs.

EDUCATION/EXPERIENCE:

Education, training, and/or experience which clearly demonstrates possession of the knowledge, skills and abilities listed above. Examples of qualifying education/experience are:

Civil Engineer:

Registration by the State of California as a Professional Engineer (Business and Professional Code, Section 6730).

Senior Civil Engineer:

1. Registration by the State of California as a Professional Engineer, AND, two (2) years of post-registration experience perform professional civil and structural engineering work; OR,

2. Two (2) years of experience as a Civil Engineer with the County of San Diego.

Note: Supervisory experience in planning, directing, coordinating, and evaluating the work of subordinate professional registered engineers is highly desirable.

Principal Civil Engineer:

Registration by the State of California as a Professional Engineer, AND, four (4) years of post-registration experience perform professional civil and structural engineering work. Previous work experience must have included at least two (2)

years in planning, directing, coordinating, and evaluating the work of subordinate professional registered engineers and serving as project manager or project engineer over major/significant engineering projects in such areas as: transportation, sanitation, or land development.

SPECIAL NOTES, LICENSES, OR REQUIREMENTS:

License:

Registration by the State of California as a Professional Engineer (Business and Professional Code, Section 6730).

A valid California Class C driver's license is required by the time of appointment and must be maintained throughout employment in this class.